SAE Aerospace
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AEROSPACE STANDARD

SAE AS50861/5

Issued 2001-07
Reaffirmed 2012-12

Wire, Electrical, Polyvinyl Chloride Insulated, Polyvinylidene Fluoride Jacket, Tin-Coated Copper Conductor, 600-Volt, 110°C

FSC 6145

RATIONALE

AS50861/5 has been reaffirmed to comply with the SAE five-year review policy.

NOTICE

This document has been taken directly from U.S. Military Specification MIL-W-5086/5C and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-W-5086/5C. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this technical report.

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http://www.sae.org/technical/standards/AS50861/5

The complete requirements for acquiring the wire described herein shall consist of this document and the latest issue of Specification MIL-W-5086.

From date of issue of this revision, wire of this specification sheet shall not be used in aerospace applications. See “Non-Use” note on page 4.

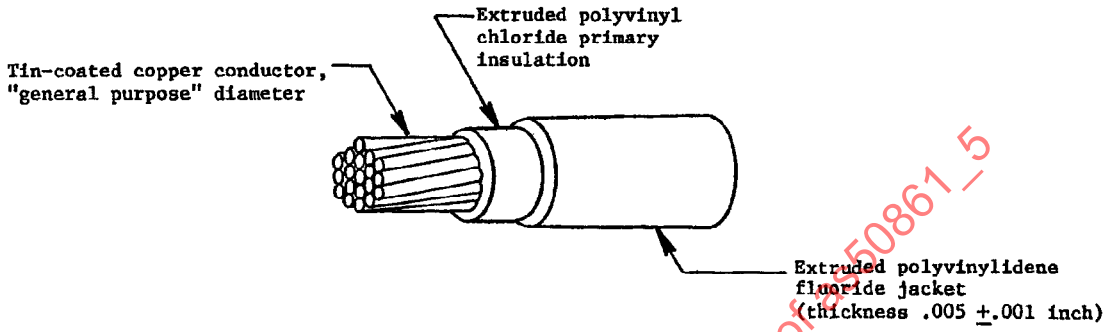

TABLE I. Construction details.

Part no. 1/	Wire size	Stranding (Number of strands X AWG gage of strands)	Diameter of stranded conductor (inches)		Finished wire		
			(min)	(max)	Resistance at 20°C (68°F) (ohms/1000 ft) (max)	Diameter (inches)	Weight (lbs/1000 ft) (max)
M5086/5-24-*	24	19 x 36	.023	.026	26.2	.057 ±.004	3.30
M5086/5-22-*	22	19 x 34	.029	.033	16.2	.066 ±.004	4.41
M5086/5-20-*	20	19 x 32	.037	.041	9.88	.076 ±.004	6.26
M5086/5-18-*	18	19 x 30	.046	.051	6.23	.086 ±.004	8.93
M5086/5-16-*	16	19 x 29	.052	.058	4.81	.095 ±.004	10.82
M5086/5-14-*	14	19 x 27	.065	.073	3.06	.111 ±.005	16.40
M5086/5-12-*	12	37 x 28	.084	.090	2.02	.137 ±.005	25.80
M5086/5-10-*	10	37 x 26	.106	.114	1.26	.161 ±.005	40.40
M5086/5-8-*	8	133 x 29	.158	.173	.701	.219 ±.006	66.86

1/ Part no.: The asterisks in the part number column, Tables I and II, shall be replaced by color code designators in accordance with MIL-STD-681. Examples: Size 20, white - M5086/5-20-9; white with orange stripe - M5086/5-20-93.

TABLE II. Bend test mandrels and test loads.

Part no.	Mandrel diameter (inches) (±3%)			Test load (lbs) (±3%)	
	Life cycle (oven and bend tests) 1/	Cold bend test	Wrap test	Life cycle (oven and bend tests) 1/	Cold bend test
M5086/5-24-*	3.0	2.0	.18	.50	1.0
M5086/5-22-*	4.5	3.0	.21	.75	2.0
M5086/5-20-*	4.5	3.0	.24	.75	2.0
M5086/5-18-*	4.5	3.0	.27	1.0	2.0
M5086/5-16-*	6.5	3.0	.30	1.0	3.0
M5086/5-14-*	6.5	6.0	.35	1.0	3.0
M5086/5-12-*	6.5	6.0	.43	3.0	3.0
M5086/5-10-*	10.0	6.0	.51	3.0	5.0
M5086/5-8-*	10.0	6.0	.69	3.0	5.0

1/ Also for bend tests after immersion.

WIRE RATINGS AND ADDITIONAL REQUIREMENTS

Temperature rating: 110°C (230°F) max conductor temperature
Voltage rating: 600 volts (rms) at sea level
Blocking: 110° ±2°C (230° ±3.6°F)
Color: In accordance with MIL-STD-104, Class 1; white preferred
Color striping or banding durability: 125 cycles (250 strokes) (min), 500 grams weight
Flammability (Method II):
- 30 sec (max) after-flame
- 3.0 inches (max) flame travel
- No flaming of tissue paper

Humidity resistance: 100 megohms for 1000 ft, min insulation resistance after humidity exposure
Identification durability: 125 cycles (250 strokes) (min), 500 grams weight
Impulse dielectric test:
- Primary insulation (when test is used in lieu of spark test): 6.0 kilovolts (peak), 100% test
- Finished wire: 8.0 kilovolts (peak), 100% test

Insulation resistance: 500 megohms for 1000 ft (min)
Life cycle: Oven temperature, 150° ±2°C (302° ±3.6°F)
Low temperature (cold bend): -55° ±2°C (-67° ±3.6°F)
Shrinkage: 0.125 inch max at 150° ±2°C (302° ±3.6°F)
Smoke: 120°C (248°F)
Spark test of primary insulation: 3000 volts (rms), 60 Hz, 100% test
Surface resistance: 500 megohm-inches (min), initial and final readings
Thermal shock:
- Oven temperature, 110° ±2°C (230° ±3.6°F)
- Max change in measurement, 0.06 inch

Wet dielectric test: 2000 volts (rms)
Wrap test oven temperature: 145° ±2°C (293° ±3.6°F)